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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,243	08/27/2003	Motoyuki Shima	5988-055-027	3756

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EXAMINER

ASHTON, ROSEMARY E

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,243

Applicant(s)

SHIMA ET AL.

Examiner

Rosemary E. Ashton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-12 is/are allowed.
- 6) ☒ Claim(s) 1-9 and 13-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. Applicant's filing of a certified translation of the foreign priority document overcomes the Sato art. Thus this rejection is withdrawn.

Applicant amends the claims in an attempt to read on the copolymer having only two monomers, however, for the reasons stated in the 112 rejection below the claim language is not clear if this is so. Thus the rejections over Nakamura and Kobayashi are maintained and new art is also applied to the claims.

Claim Rejections - 35 USC § 112

2. Claims 1-9 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-9 are rejected because the claims read on a copolymer consisting of methacrylate or acrylate monomers but then states the copolymer comprises monomer units having formulas 1-6 or 1-3. In reading these claims the copolymer can only have (me)acrylate groups with no other groups, such as norbornene, in the backbone of the copolymer but it can also have monomers other than formulas 1-6 or 1-3.

Claim 15 reads on a resin having at least one of formulas 1-3 and defines R1 and R2. The claim then reads as at least one unit of formulas 1-3... All after "at least one recurring unit" confuses the meaning of the claim. Does the resin have more than one monomer of formulas 1-3?

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. The rejection is repeated from the prior office action.

The patent teaches a radiation sensitive composition comprising a copolymer such as copolymer 1 in col. 13, shown below. Copolymer 1 has monomers having applicant's formulas 1 (f-1) and 3 (f-3). In f-1 R2 on the adamantyl ring is a methyl group and in f-3 R2 on the cyclohexyl ring is an ethyl group. In col. 15 the copolymer is combined with a triphenylsulfonium photoacid generator (PAG) and PGMEA as the solvent. The PAG has a 4-methoxy group as in f-7 of the instant application.

Synthesis of Copolymer 1

To 69.4 parts by weight of ethyl acetate, 7.4 parts by weight (0.2 mole) of 1-ethyl-1-cyclohexyl methacrylate, 5.3 parts by weight (0.12 mole) of 2-methyl-2-adamantyl methacrylate, 9.9 parts by weight (0.54 mole) of maleic anhydride, 7.3 parts by weight (0.34 mole) of allyltrimethylsilane, and 0.6 part by weight of azobisisobutyronitrile were added, and were stirred at room temperature (25° C.) for 60 minutes.

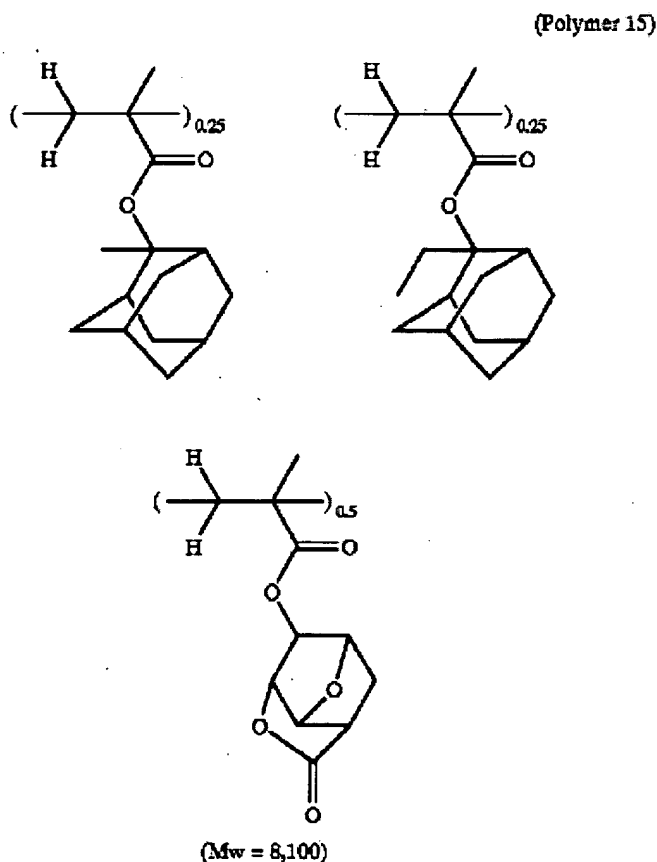
The patent does not teach the amount of monomers in the polymer as claimed, however, it would have been obvious to one of ordinary skill in the to vary the amount of monomers with a reasonable expectation of obtaining a polymer for a

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photoresist composition because variation in the amount of monomers in a polymer to obtain a successful photoresist composition is well known in the art.

5. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. patent no.

The patent teaches a radiation sensitive composition comprising a polymer such as copolymer 15 in col. 48, shown below. Copolymer 15 has monomers having two of applicant's formulas 1 (f-1). In the first adamantly monomer R2 is a methyl group and in the second adamantly monomer R2 is an ethyl group. In Table 2 (example 29) in col. 55 copolymer 15 is combined with a triphenylsulfonium photoacid (TPSNf) and cyclohexanone (CyHO) as the solvent.



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The patent does not teach the amount of monomers in the polymer as claimed, however, it would have been obvious to one of ordinary skill in the to vary the amount of monomers with a reasonable expectation of obtaining a polymer for a photoresist composition because variation in the amount of monomers in a polymer to obtain a successful photoresist composition is well known in the art.

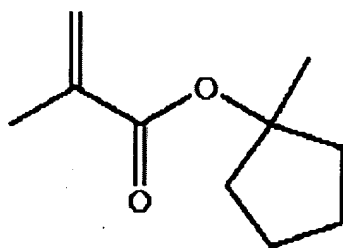
6. Claims 4,7,13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. in view of Uenishi.

Allen teaches a photoresist composition for exposure to 193 nm comprising a resin and a photoacid generator. As shown in claim 25, below, the polymer has formula 2 and formula 1 in applicant's claims 4 and 7.

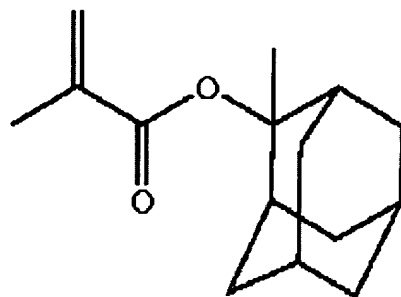
25. The composition of claim 24, wherein said at least one co-monomer is selected from the group consisting of t-butylmethacrylate, 1-methyl-cyclopentylmethacrylate, 2-methyl-2-adamantylmethacrylate, or a combination thereof.

Allen teaches a photoresist having a resin with monomers having formula 1 (XXI) and formula 2 (XX) in claims 13-15,18. In col. 11-12 it reaches the resin may also having a lactone monomer (XXIII) that is the same lactone monomer in claims 13-15.

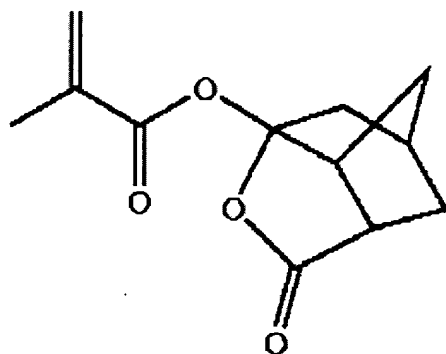
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XX



XXI



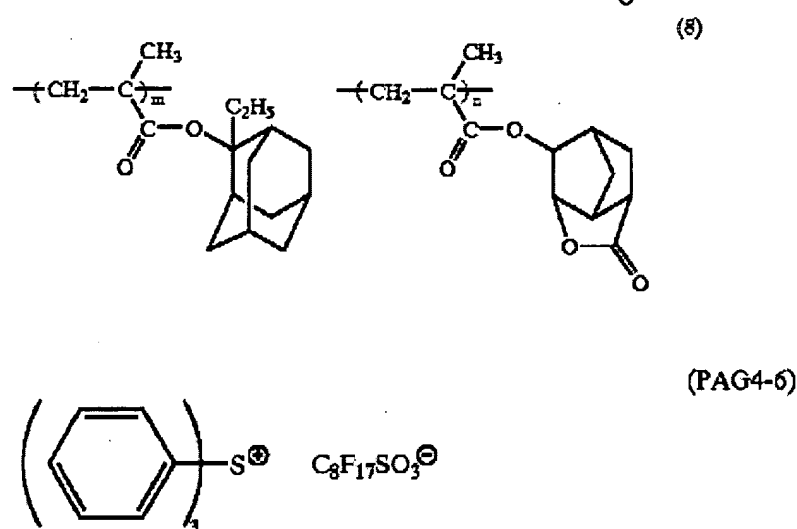
XXIII

It would have been obvious to one of ordinary skill in the art to form the photoresist resin having monomers with formulas I, XX, XXI and XXIII because Allen teaches these monomers may be combined to form a resin which gives the photoresist composition patterning at 193 nm.

Allen does not teach the photoacid generator (PAG) or the solvent used in the composition.

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In Table 2, example 4, Uenishi teaches a photoresist composition for exposure to 193 nm comprising polymer 8 and PAG 4-6, below. Polymer 8 meets the limitations of claim 15. The solvent is PGMEA as in claim 17 (col. 102, lines 10-12). The PAG meets the limitations of the sulfonium PAG in claim 16.



It would have been obvious to one of ordinary skill in the art to use sulfonium PAG4-6 and a solvent of PGMEA, as taught in Uenishi, as the PAG and solvent in the photoresist composition of Allen with a reasonable expectation of obtaining a photoresist composition for patterning at 193 nm because both Allen and Uenishi are directed to using the same monomers in a photoresist polymer for exposure to 193 nm.

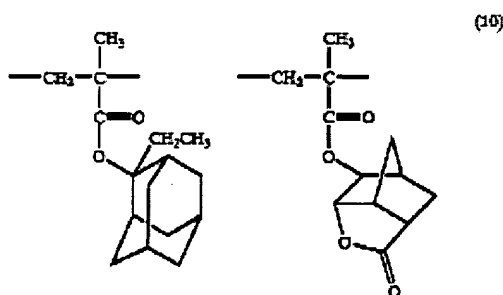
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form the photoresist resin having monomers with formulas I, XX, XXI and XXIII because Allen teaches these monomers may be combined to form a resin which gives the photoresist composition patterning at 193 nm.

The patents do not teach the amount of monomers in the polymer as claimed, however, it would have been obvious to one of ordinary skill in the to vary the amount of monomers with a reasonable expectation of obtaining a polymer for a photoresist composition because variation in the amount of monomers in a polymer to obtain a successful photoresist composition is well known in the art.

7. Claim 15 is rejected under 35 U.S.C. 103 as being obvious over Fujimori et al.

In col. 118 Fujimori teaches a photoresist composition having polymer 10 shown below.



The patent does not teach the amount of monomers in the polymer as claimed, however, it would have been obvious to one of ordinary skill in the to vary the amount of monomers with a reasonable expectation of obtaining a polymer for a photoresist composition because variation in the amount of monomers in a polymer to obtain a successful photoresist composition is well known in the art.

Allowable Subject Matter

8. Claims 10-12 are allowed. The following is an examiner's statement of reasons for allowance: No prior art was found reading on a radiation sensitive composition comprising a polymer having a monomer with formula 6 wherein R2 is a methyl group and at least one monomer unit consisting of monomers 1-3 wherein R2 is a methyl group and a photoacid generator.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosemary E. Ashton whose telephone number is 571-272-1326. The examiner can normally be reached on Mon-Fri, 11:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rosemary E. Ashton
Primary Examiner
Art Unit 1752

January 23, 2006
rea

ROSEMARY ASHTON
PRIMARY EXAMINER